

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: FAIL-SAFE

Report Number: P#

Luminaire Tested: **FLDSQ4C45D010 FEU4C459050 F4LC-CSSQ-MMS**

Issue Date: 12/13/2022

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P#
 Test Lab: INNOVATION CENTER
 Issue Date: 12/13/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: FAIL-SAFE
 Catalog Number: FLDSQ4C45D010 FEU4C459050 F4LC-CSSQ-MMS
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

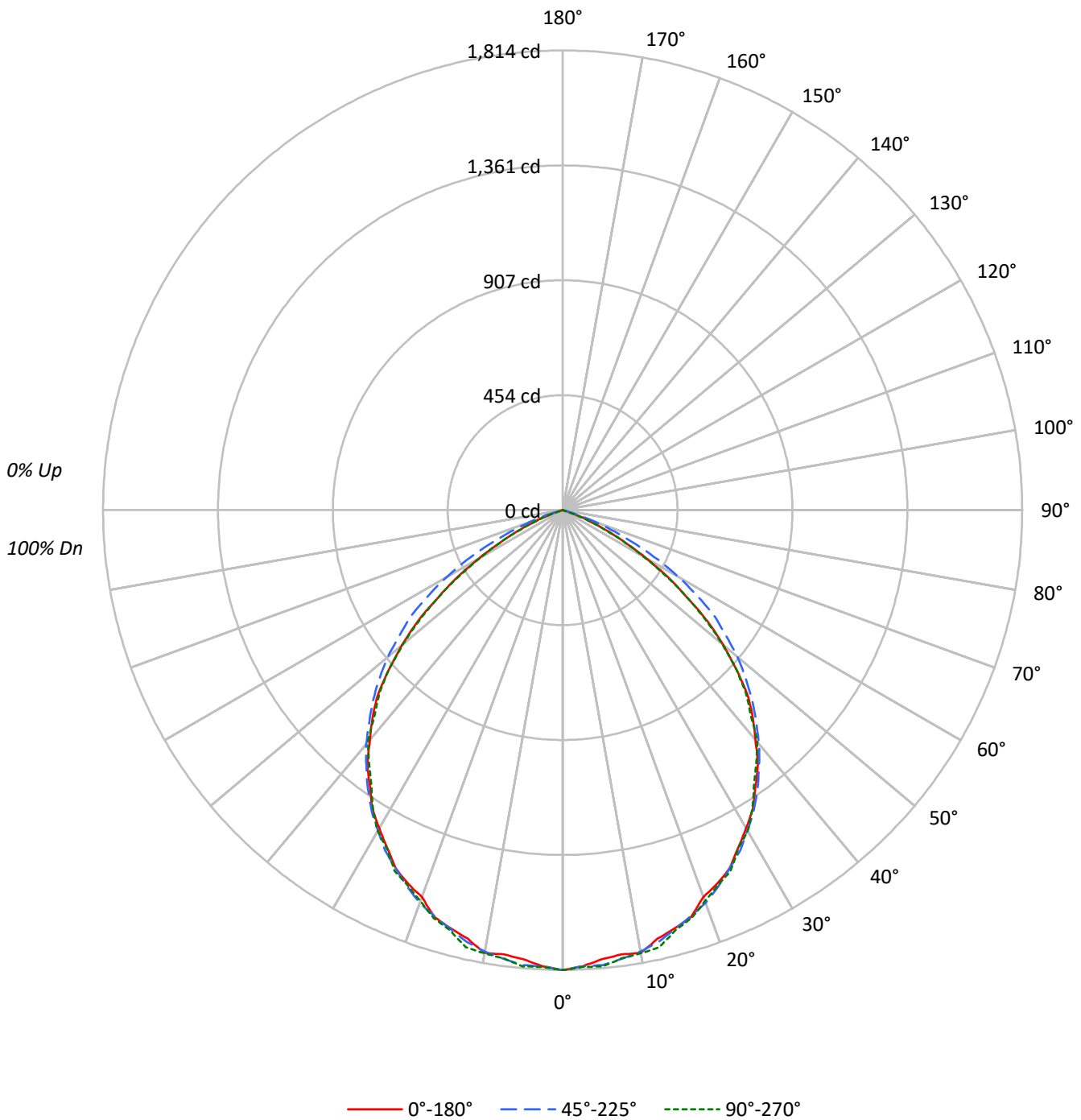
Lumens per Lamp: N/A
 Luminaire Lumens: 3876.0 lumens
 Efficiency: N/A
 Efficacy: 78.1 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 49.6
 Input Voltage (V):
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	GONIO 1 IN0055	4/22/2021	10/22/2021
Power Meter	XITRON 2801 IN0197	12/1/2020	12/1/2021
AC Power Source	CHROMA 61505 IN0196	12/1/2020	12/1/2021
DC Power Supply	AGILENT E3634A IN0198	11/30/2020	11/30/2021
Room Thermometer	ONSET IN0143	12/1/2020	12/1/2021

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Luminous Intensity Polar Plot



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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					20	
RC	80					70					50					30					10	0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				100
1	111	108	104	101	109	105	102	100	101	99	96	97	95	94	94	92	91	89				89
2	103	96	91	86	100	94	89	85	91	87	83	88	84	81	85	82	79	77				77
3	95	86	79	74	93	85	78	73	82	76	72	79	74	71	77	73	69	67				67
4	88	77	70	64	86	76	69	63	74	67	63	71	66	62	69	65	61	59				59
5	81	70	62	56	79	69	61	56	67	60	55	65	59	54	63	58	54	52				52
6	75	63	55	49	73	62	55	49	61	54	49	59	53	48	57	52	48	46				46
7	70	58	50	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41				41
8	65	53	45	40	64	52	45	39	51	44	39	50	44	39	49	43	39	37				37
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35	33				33
10	57	45	38	33	56	44	37	33	44	37	32	43	37	32	42	36	32	31				31

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	175079	175079	175079
5°	172251	174489	174992
10°	173743	173234	173988
15°	170697	170946	171466
20°	166724	169373	168582
25°	166009	166009	167105
30°	161375	162522	162823
35°	156344	157864	155131
40°	149007	151917	150620
45°	141027	144193	139622
50°	124201	135024	123421
55°	100581	123560	101018
60°	73602	102452	72116
65°	44726	72969	43562
70°	17435	39270	16729
75°	1939	10588	1939
80°	1445	1445	1445
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	171.3	4.4
10°-20°	484.6	12.5
20°-30°	719.1	18.6
30°-40°	833.2	21.5
40°-50°	798.9	20.6
50°-60°	587.4	15.2
60°-70°	253.7	6.5
70°-80°	27.4	0.7
80°-90°	0.4	0.0
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	1375.0	35.5
0°-40°	2208.3	57.0
0°-60°	3594.6	92.7
0°-90°	3876.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3876.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1814	1814	1814	1814	1814	
5°	1778	1796	1802	1804	1807	170
15°	1709	1719	1711	1714	1716	482
25°	1559	1557	1559	1562	1570	714
35°	1327	1335	1340	1338	1317	830
45°	1034	1036	1057	1041	1023	786
55°	598	660	734	657	600	538
65°	196	245	320	242	191	201
75°	5	8	28	5	5	16
85°	0	0	0	0	0	0
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5
2.5°	1801.5	1822.2	1824.8	1811.8	1806.7	1799.0	1817.0	1804.2	1809.3	1804.2	1801.5
5°	1778.4	1801.5	1804.2	1804.2	1799.0	1796.4	1804.2	1801.5	1799.0	1793.9	1801.5
7.5°	1768.1	1780.9	1793.9	1778.4	1786.1	1783.6	1801.5	1793.9	1791.2	1791.2	1786.1
10°	1773.3	1770.6	1780.9	1765.5	1770.6	1765.5	1780.9	1780.9	1775.8	1770.6	1768.1
12.5°	1731.9	1752.5	1752.5	1750.0	1744.9	1737.1	1752.5	1762.9	1747.4	1747.4	1744.9
15°	1708.8	1713.9	1716.5	1716.5	1713.9	1719.1	1726.8	1716.5	1719.1	1706.2	1711.3
17.5°	1683.0	1672.7	1680.4	1675.3	1677.9	1683.0	1693.3	1693.3	1677.9	1675.3	1680.4
20°	1623.7	1654.6	1657.3	1641.8	1644.3	1644.3	1662.4	1647.0	1657.3	1644.3	1649.5
22.5°	1595.3	1615.9	1618.6	1598.0	1610.8	1595.3	1613.4	1590.2	1615.9	1598.0	1605.6
25°	1559.3	1556.7	1564.4	1554.1	1556.7	1556.7	1569.6	1559.3	1567.0	1556.7	1559.3
27.5°	1500.1	1520.7	1518.0	1507.7	1512.9	1510.4	1536.1	1507.7	1523.2	1510.4	1515.5
30°	1448.4	1466.5	1461.4	1451.1	1451.1	1443.3	1471.7	1463.9	1461.4	1461.4	1458.7
32.5°	1396.9	1399.5	1394.4	1396.9	1399.5	1389.2	1412.4	1402.1	1399.5	1402.1	1404.7
35°	1327.3	1327.3	1332.4	1324.8	1335.1	1335.1	1355.7	1342.7	1340.2	1332.4	1340.2
37.5°	1265.5	1257.8	1260.3	1260.3	1265.5	1270.6	1280.9	1275.8	1275.8	1268.1	1273.2
40°	1183.0	1177.9	1185.5	1185.5	1193.3	1193.3	1203.6	1198.5	1206.1	1206.1	1206.1
42.5°	1110.9	1110.9	1105.7	1113.4	1116.0	1113.4	1131.5	1128.9	1131.5	1126.3	1128.9
45°	1033.5	1033.5	1028.3	1025.8	1038.6	1036.1	1056.7	1048.9	1059.2	1054.1	1056.7
47.5°	927.8	940.7	933.0	940.7	956.2	958.8	971.6	966.5	976.8	969.1	979.4
50°	827.4	827.4	835.0	845.4	860.8	863.4	878.9	889.2	894.4	896.9	899.5
52.5°	721.7	719.1	726.8	739.7	752.6	762.9	778.4	793.8	804.1	819.6	811.8
55°	597.9	603.1	610.9	626.3	646.9	659.8	672.7	693.3	711.4	719.1	734.5
57.5°	492.2	487.1	492.2	512.9	536.1	546.4	564.5	585.1	610.9	626.3	631.5
60°	381.4	384.0	389.2	407.3	425.3	440.7	448.5	481.9	505.2	520.6	530.9
62.5°	281.0	286.1	291.3	306.7	324.7	337.7	350.5	378.9	399.5	414.9	425.3
65°	195.9	198.4	206.2	213.9	232.0	244.8	255.1	278.3	299.0	311.9	319.6
67.5°	121.1	123.7	128.8	139.2	152.1	162.4	172.7	188.1	206.2	219.0	221.7
70°	61.8	64.5	67.0	74.8	85.1	90.2	97.9	110.8	123.7	134.0	139.2
72.5°	20.6	20.6	23.2	28.4	33.5	38.7	41.2	54.2	64.5	69.6	72.1
75°	5.2	5.2	5.2	5.2	5.2	7.8	7.8	15.5	20.6	25.8	28.4
77.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	5.2	5.2
80°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5	1814.5
2.5°	1814.5	1809.3	1806.7	1809.3	1809.3	1806.7	1814.5	1824.8	1837.6	1804.2
5°	1811.8	1806.7	1811.8	1796.4	1804.2	1799.0	1809.3	1806.7	1817.0	1806.7
7.5°	1804.2	1793.9	1796.4	1788.7	1799.0	1786.1	1793.9	1809.3	1799.0	1783.6
10°	1778.4	1773.3	1791.2	1765.5	1760.3	1770.6	1791.2	1775.8	1770.6	1775.8
12.5°	1752.5	1752.5	1760.3	1739.7	1742.2	1747.4	1757.7	1747.4	1752.5	1765.5
15°	1724.3	1719.1	1731.9	1716.5	1713.9	1708.8	1719.1	1719.1	1724.3	1716.5
17.5°	1690.7	1683.0	1683.0	1677.9	1675.3	1688.2	1693.3	1695.9	1698.5	1688.2
20°	1649.5	1647.0	1654.6	1647.0	1649.5	1652.1	1652.1	1647.0	1670.1	1641.8
22.5°	1605.6	1613.4	1603.1	1598.0	1603.1	1608.3	1608.3	1610.8	1605.6	1600.5
25°	1561.9	1567.0	1569.6	1554.1	1561.9	1554.1	1572.2	1574.7	1564.4	1569.6
27.5°	1523.2	1515.5	1512.9	1502.6	1507.7	1505.2	1507.7	1507.7	1523.2	1502.6
30°	1463.9	1456.2	1458.7	1451.1	1453.6	1451.1	1453.6	1453.6	1463.9	1461.4
32.5°	1407.2	1399.5	1402.1	1394.4	1394.4	1396.9	1391.7	1391.7	1399.5	1394.4
35°	1353.1	1335.1	1337.6	1335.1	1337.6	1327.3	1327.3	1324.8	1329.9	1317.0
37.5°	1275.8	1268.1	1265.5	1262.9	1265.5	1260.3	1265.5	1257.8	1265.5	1255.1
40°	1206.1	1201.0	1203.6	1188.2	1188.2	1190.7	1185.5	1183.0	1185.5	1195.8
42.5°	1136.6	1126.3	1121.2	1116.0	1118.6	1110.9	1108.2	1103.1	1108.2	1097.9
45°	1054.1	1054.1	1051.6	1038.6	1041.3	1041.3	1031.0	1020.6	1023.2	1023.2
47.5°	979.4	974.3	971.6	958.8	956.2	953.7	943.3	935.6	935.6	927.8
50°	896.9	891.7	884.1	871.1	866.0	850.5	842.8	832.5	822.2	822.2
52.5°	819.6	801.5	791.2	770.6	762.9	755.1	734.5	726.8	719.1	711.4
55°	726.8	711.4	690.8	667.5	657.2	644.3	623.7	608.2	597.9	600.5
57.5°	636.6	610.9	590.2	559.3	546.4	538.6	518.0	497.4	487.1	487.1
60°	525.8	505.2	479.4	451.0	440.7	427.9	402.0	389.2	381.4	373.7
62.5°	420.1	404.6	381.4	345.3	337.7	324.7	306.7	291.3	283.5	283.5
65°	314.4	299.0	278.3	252.6	242.3	232.0	216.5	201.1	193.3	190.8
67.5°	221.7	203.6	185.6	165.0	157.2	152.1	136.6	126.3	121.1	118.5
70°	134.0	123.7	110.8	95.4	87.6	82.4	72.1	64.5	61.8	59.3
72.5°	69.6	61.8	51.5	41.2	36.1	30.9	25.8	20.6	18.1	18.1
75°	25.8	20.6	12.9	7.8	5.2	5.2	5.2	5.2	5.2	5.2
77.5°	5.2	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
80°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)